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No. 9500200

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN

'PHBE2'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of Washington, D.C. this thirtieth day of August in the year of our Lord one thousand nine hundred and ninety-six.*

Attest:

Marsha A. Stanley

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Robert Lee Segebart
App. No. 10/768,338

REF
A6

REPRODUCE LOCALLY *Include form number and date on all reproductions*

FORM APPROVED OMB NO 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a)

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the certificate)

Pioneer Hi-Bred International, Inc.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER

3. VARIETY NAME

PHBE2

4. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code, and Country)

Research & Product Development
7301 NW 62nd Avenue, PO Box 85
Johnston, Iowa 50131-0085

5. TELEPHONE (Include area code)

515/270-3300

6. FAX (Include area code)

515/253-2125

FOR OFFICIAL USE ONLY

PVPO NUMBER

9500200

FILING DATE

May 16, 1995

7. GENUS AND SPECIES NAME

Zea mays

8. FAMILY NAME (Botanical)

Gramineae

FEES RECEIVED

FILING AND EXAMINATION FEE:

$ 2325.00 + 125.00

DATE

5/16/95 / 6/01/95

9. CROP KIND NAME (Common name)

Corn

CERTIFICATION FEE:

$ 300.00

DATE

August 6, 1996

10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name)

Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION

Iowa

12. DATE OF INCORPORATION

May 6, 1926

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

Dr. Bruce D. McBratney
Pioneer Hi-Bred International, Inc.
Research & Product Development
7301 NW 62nd Avenue, PO Box 85
Johnston, IA 50131-0085

14. TELEPHONE (Include area code)

515/270-3300

15. FAX (Include area code)

515/253-2125

16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (*Follow instructions on reverse*)

a. ☒ Exhibit A. Origin and Breeding History of the Variety
b. ☒ Exhibit B. Statement of Distinctness
c. ☒ Exhibit C. Objective Description of the Variety
d. ☒ Exhibit D. Additional Description of the Variety
e. ☒ Exhibit E. Statement of the Basis of the Applicant's Ownership
f. ☒ Voucher Sample (2,500 viable untreated seeds of, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository)
g. ☒ Filing and Examination Fee ($2,460), made payable to "Treasurer of the United States" (*Mail to PVPO*)

17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (*See Section 83(a) of the Plant Variety Protection Act*)

☐ YES (*If "yes," answer items 18 and 19 below*) ☒ NO (*If "no," go to item 20*)

18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?

☐ YES ☐ NO

19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?

☐ YES (*If "yes," give names of countries and dates*) ☒ NO

21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned applicant(s) is/are the owner(s) of (the) sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is/are informed that false representation herein can reguardize protection and result in penalties.

SIGNATURE OF APPLICANT (*Owner(s)*)

NAME (*Please print or type*)

Pioneer Hi-Bred International, Inc.

CAPACITY OR TITLE | DATE

SIGNATURE OF APPLICANT (*Owner(s)*)

Bruce D. McBratney

NAME (*Please print or type*)

Dr. Bruce D. McBratney

CAPACITY OR TITLE

Herbicide Resistant Research Manager

DATE

May 31, 1995

SD-470 (04-96) (*Previous editions are to be destroyed*)

(See reverse for instructions and information collection burden statement)

9500200

14A. Exhibit A. Origin and Breeding History

Pedigree: PHR03/PHN46)X3431112X

Pioneer Line PHBE2, Zea mays L., a yellow corn inbred, was developed by Pioneer Hi-Bred International, Inc. from the single cross PHR03 X PHN46 using the pedigree method of breeding. The progenitors of PHBE2 are proprietary inbred lines of Pioneer Hi-Bred International, Inc. Selfing and selection were practiced within the above F1 cross for 1 generation in the development of PHBE2 at Garden City, KS. During line development, crosses were made to inbred testers for the purpose of estimating the line's combining ability. Yield trials were grown at Garden City, KS as well as other Pioneer research stations. After initial testing, additional hybrid combinations have been evaluated and subsequent generations of the line have been grown and hand-pollinated with observations made for uniformity.

PHBE2 has shown uniformity and stability for all traits as described in Exhibit C - "Objective Description of Variety". It has been self-pollinated and ear-rowed 7 generations with careful attention paid to uniformity of plant type to assure genetic homozygousity and phenotypic stability. The line has been increased both by hand and in isolated fields with continued observations for uniformity.

No variant traits have been observed or are expected in PHBE2.

The criteria used in the selection of PHBE2 were yield, both per se and in hybrid combinations; kernel size, especially important in production; ability to germinate in adverse conditions; number of tillers, especially important in production because having numerous tillers increases hybrid production costs spent on detasseling; disease and insect resistance; pollen yield; tassel size; pollen shed duration.

9500200

DEVELOPMENTAL HISTORY FOR PHBE2

Season/Year	Inbreeding Level
Summer 1988	F0
Winter 1989	F1*
Summer 1989	F2
Summer 1990	F3
Winter 1991	F4
Summer 1991	F5
Winter 1992	F6
Summer 1992	F7
Winter 1993	F8**
Summer 1993	F9
Winter 1994	F10

*PHBE2 was selfed and selected through F1 generation.
**PHBE2 was selfed and ear-rowed from F2 through F8 generations.

Exhibit B. Distinctness Statement

PHBE2 is most similar to the Pioneer Hi-Bred International, Inc. proprietary inbred line PHN46 (PVP Certificate No. 9000249). The leaves of PHBE2 have no sheath pubescence and many longitudinal creases whereas PHN46 leaves have light sheath pubescence with few longitudinal creases. The husk extension of PHBE2 is medium in length and is long for PHN46. PHBE2 is more susceptible to root lodging than PHN46. PHBE2 has a pollen shed score of 8, whereas PHN46's pollen shed score is 4. PHBE2 has 12 primary lateral tassel branches whereas PHN46 has 5. The differences between PHBE2 and PHN46 are found in Attachments A and B, respectively.

FULL DESCRIPTION

	TRAIT NAME	STAT	VALUE	N	TRAIT DESCRIPTI
93	POLLSC1-9	MEAN	N/A		
93		STDEV	N/A		
93		Envs	0		
93		Reps	0		
94	POLLSC1-9	MEAN	N/A		
94		STDEV	N/A		
94		Envs	0		
94		Reps	0		
95	POLLSC1-9	MEAN	7.50		
95		STDEV	2.12		
95		Envs	2		
95		Reps	2		
	POLLSC1-9	MEAN	7.50		
		STDEV	2.12		
		Envs	2		
		Reps	2		
93	1ry Glume Color	MODE	5	2	Green
94	1ry Glume Color	MODE	5	2	Green
95	1ry Glume Color	MODE	1	1	Yellow
95		2nd	5	1	Green
	1ry Glume Color	MODE	5	5	Green
		2nd	1	1	Yellow
93	Munsell Code 1ry Glume	MODE	5GY 6/8	1	
93		2nd	5GY 5/10	1	
94	Munsell Code 1ry Glume	MODE	5GY 4/6	2	
94		2nd	5GY 5/8	1	
95	Munsell Code 1ry Glume	3rd	5GY 4/8	1	
95		MODE	5GY48	1	
	Munsell Code 1ry Glume	2nd	7.5GY 4/6	1	
		MODE	5GY 4/6	2	
		2nd	5GY 6/8	1	
		3rd	5GY48	1	
		4th	7.5GY 4/6	1	
		5th	5GY 4/8	1	
		6th	5GY 5/8	1	
		7th	5GY 5/10	1	
93	Tassel Branch Angle	MEAN	32.50		
93		STDEV	3.54		
93		Envs	2		
93		Reps	2		
94	Tassel Branch Angle	MEAN	40.00		
94		STDEV	0.00		
94		Envs	3		
94		Reps	3		
95	Tassel Branch Angle	MEAN	37.50		
95		STDEV	10.61		
95		Envs	2		
95		Reps	2		
	Tassel Branch Angle	MEAN	37.14		
		STDEV	5.67		
		Envs	7		
		Reps	7		

FULL DESCRIPTION

	TRAIT NAME	STAT	VALUE	N	TRAIT DESCRIPTI
93	Tassel No. 1ry Branches	MEAN	13.00		
93		STDEV	0.00		
93		Envs	2		
93		Reps	2		
94	Tassel No. 1ry Branches	MEAN	11.50		
94		STDEV	1.00		
94		Envs	4		
94		Reps	4		
95	Tassel No. 1ry Branches	MEAN	10.50		
95		STDEV	2.12		
95		Envs	2		
95		Reps	2		
	Tassel No. 1ry Branches	MEAN	11.63		
		STDEV	1.41		
		Envs	8		
		Reps	8		
93	K Endosperm Color	MODE	3	2	Yellow
94	K Endosperm Color	MODE	3	4	Yellow
95	K Endosperm Color	MODE	3	1	Yellow
	K Endosperm Color	MODE	3	7	Yellow
93	Munsell Code K Endo. Color	MODE	10YR 6/12	2	
94	Munsell Code K Endo. Color	MODE	2.5Y 8/16	1	
94		2nd	10YR 8/14	1	
94		3rd	2.5Y 8/12	1	
94		4th	10YR 6/12	1	
95	Munsell Code K Endo. Color	MODE	2.5Y8.512	1	
	Munsell Code K Endo. Color	MODE	10YR 6/12	3	
		2nd	2.5Y 8/12	1	
		3rd	2.5Y8.512	1	
		4th	2.5Y 8/16	1	
		5th	10YR 8/14	1	

FULL DESCRIPTION

	TRAIT NAME	STAT	VALUE	N	TRAIT DESCRIPTI
93	POLLSC1-9	MEAN	N/A		
93		STDEV	N/A		
93		Envs	0		
93		Reps	0		
94	POLLSC1-9	MEAN	N/A		
94		STDEV	N/A		
94		Envs	0		
94		Reps	0		
94					
95	POLLSC1-9	MEAN	4.50		
95		STDEV	2.12		
95		Envs	2		
95		Reps	2		
	POLLSC1-9	MEAN	4.50		
		STDEV	2.12		
		Envs	2		
		Reps	2		
93	1ry Glume Color	MODE	5	2	Green
94	1ry Glume Color	MODE	5	1	Green
95	1ry Glume Color	MODE	4	1	Purple
95		2nd	5	1	Green
	1ry Glume Color	MODE	5	4	Green
		2nd	4	1	Purple
93	Munsell Code 1ry Glume	MODE	5GY 6/6	1	
93		2nd	5GY 5/6	1	
94	Munsell Code 1ry Glume	MODE	5GY 5/8	2	
95	Munsell Code 1ry Glume	MODE	7.5GY510	1	
95		2nd	7.5GY 4/6	1	
	Munsell Code 1ry Glume	MODE	5GY 5/8	2	
		2nd	5GY 6/6	1	
		3rd	7.5GY510	1	
		4th	7.5GY 4/6	1	
		5th	5GY 5/6	1	
93	Tassel Branch Angle	MEAN	30.00		
93		STDEV	0.00		
93		Envs	2		
93		Reps	2		
94	Tassel Branch Angle	MEAN	30.00		
94		STDEV	N/A		
94		Envs	1		
94		Reps	1		
95	Tassel Branch Angle	MEAN	45.00		
95		STDEV	28.28		
95		Envs	2		
95		Reps	2		
	Tassel Branch Angle	MEAN	36.00		
		STDEV	16.36		
		Envs	5		
		Reps	5		

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FULL DESCRIPTION

	TRAIT NAME	STAT	VALUE	N	TRAIT DESCRIPTI
93	Tassel No. 1ry Branches	MEAN	5.00		
93		STDEV	1.41		
93		Envs	2		
93		Reps	2		
94	Tassel No. 1ry Branches	MEAN	6.50		
94		STDEV	2.12		
94		Envs	2		
94		Reps	2		
95	Tassel No. 1ry Branches	MEAN	4.50		
95		STDEV	0.71		
95		Envs	2		
95		Reps	2		
	Tassel No. 1ry Branches	MEAN	5.33		
		STDEV	1.51		
		Envs	6		
		Reps	6		
93	K Endosperm Color	MODE	3	2	Yellow
94	K Endosperm Color	MODE	3	1	Yellow
94		2nd	4	1	Pink orange
95	K Endosperm Color	MODE	3	2	Yellow
	K Endosperm Color	MODE	3	5	Yellow
		2nd	4	1	Pink orange
93	Munsell Code K Endo. Color	MODE	10YR 6/12	2	
94	Munsell Code K Endo. Color	MODE	2.5Y 8/12	1	
94		2nd	10YR 6/10	1	
95	Munsell Code K Endo. Color	MODE	2.5Y812	2	
	Munsell Code K Endo. Color	MODE	2.5Y812	2	
		2nd	10YR 6/12	2	
		3rd	10YR 6/10	1	
		4th	2.5Y 8/12	1	

FORM SD-470-28
(9-1-92)

EXHIBIT C
(Corn; Maize)

United States Department of Agriculture, Agricultural Marketing Service
Science Division, Plant Variety Protection Office
National Agricultural Library Building, Room 500
Beltsville, MD 20705

OBJECTIVE DESCRIPTION OF VARIETY
CORN (*Zea mays* L.)

Name of Applicant(s)	Variety Seed Source	Variety Name or Temporary Designation
Pioneer Hi-Bred International, Inc.		PHBE2
Address (Street & No. or R.F.D No., City, State, Zip Code and Country) 7301 N.W. 62nd Avenue, PO Box 85 Johnston, IA 50131-0085 USA		FOR OFFICIAL USE PVPO Number 9500200

Place the appropriate number that describes the varietal characters typical of this inbred variety in the spaces below. Right justify whole numbers by adding leading zeroes if necessary. Completeness should be striven for to establish an adequate variety description. Traits designated by a '*' are considered necessary for an adequate variety description and must be completed.

COLOR CHOICES (Use in conjunction with Munsell color code to describe all color choices; describe #25 and #26 in Comments section):

01=Light Green	06=Pale Yellow	11=Pink	16=Pale Purple	21=Buff
02=Medium Green	07=Yellow	12=Light Red	17=Purple	22=Tan
03=Dark Green	08=Yellow-Orange	13=Cherry Red	18=Colorless	23=Brown
04=Very Dark Green	09=Salmon	14=Red	19=White	24=Bronze
05=Green-Yellow	10=Pink-Orange	15=Red & White	20=White Capped	25=Variegated (Describe)
				26=Other (Describe)

STANDARD INBRED CHOICES (Use the most similar (in background and maturity) of these to make comparisons based on grow-out trial data):

Yellow Dent Families:		Yellow Dent (Unrelated):	Sweet Corn:
Family	Members	Col09, ND246,	C13, Iowa5125, P39, 2132
B14	CM105, A632, B64, B68	Oh7, T232	
B37	B37, B76, H84	W117, W153R	Popcorn:
B73	N192, A679, B73, NC268	W182BN	SG1533, 4722, HP301, HP7211
C103	Mo17, Va102, Va35, A682		
Oh43	A619, MS71, H99, Va26	White Dent:	Pipecorn:
WF9	W64A, A554, A654, Pa91	CI66, H105, Ky228	Mo15W, Mo16W, Mo24W

COMMENTS

Color choice noted as a 26 indicates this trait was observed and recorded as green.

Data for Items 1, 3, 4, 5, 6, 7a, 7b, 8, and 9 is based primarily on a maximum of 12reps from Johnston, Iowa, grown in 1993 & 1994, plus description information from the maintaining station.

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9500200

EXHIBIT C - PHBE2

	Standard Inbred Name
1. TYPE: (describe intermediate types in Comments section). * 2 1=Sweet 2=Dent 3=Flint 4=Flour 5=Pop 6=Ornamental 7=Pipecorn	873
2. REGION WHERE DEVELOPED IN THE U.S.A.: * 6 1=Northwest 2=Northcentral 3=Northeast 4=Southeast 5=Southcentral 6=Southwest 7=Other ____	Standard Seed Source AD93058077

3. MATURITY (In Region of Best Adaptability; show Heat Unit formula in "Comments" section)

DAYS	HEAT UNITS		DAYS	HEAT UNITS
* 69	1490.0	From emergence to 50% of plants in silk	69	1557.0
* 69	1470.0	From emergence to 50% of plants in pollen	69	1552.0
5	114.0	From 10% to 90% pollen shed	5	119.0
* ____	____	From 50% silk to optimum edible quality	____	____
____	____	From 50% silk to harvest at 25% moisture	____	____

4. PLANT:

		Standard Deviation	Sample Size		Standard Deviation	Sample Size
* 232.0	cm Plant Height (to tassel tip)	6.07	300	238.0	15.62	150
* 81.0	cm Ear Height (to base of top ear node)	5.47	300	99.0	8.33	150
9.0	cm Length of Top Ear Internode	0.75	30	16.0	1.73	15
0.0	Average Number of Tillers	0	300	0.0	0	150
1.5	Average Number of Ears per Stalk	0.55	300	1.0	0	150
4	Anthocyanin of Brace Roots: 1=Absent 2=Faint 3=Moderate 4=Dark			4		

5. LEAF:

		Standard Deviation	Sample Size		Standard Deviation	Sample Size
* 10.0	cm Width of Ear Node Leaf	1.03	30	9.0	0.58	15
* 69.0	cm Length of Ear Node Leaf	3.66	30	82.0	2.52	15
* 05	Number of leaves above top ear	0.52	30	6	0.58	15
24	Degrees Leaf Angle (measure from 2nd leaf above ear at anthesis to stalk above leaf	4.18	25	12	2.89	15
03	Leaf Color (Munsell code 5GY 3/4)			03 (Munsell Code 5GY 3/4)		
1	Leaf Sheath Pubescence (Rate on scale from 1=none to 9=like peach fuzz)			1		
4	Marginal Waves (Rate on scale from 1=none to 9=many)			4		
6	Longitudinal Creases (Rate on scale from 1=none to 9=many)			8		

6. TASSEL:

		Standard Deviation	Sample Size		Standard Deviation	Sample Size
* 12	Number of Primary Lateral Branches	1.10	30	9	1.00	15
37	Branch Angle from Central Spike	4.47	30	8	2.89	15
* 24.0	cm Tassel Length (from top leaf collar to tassel tip)	3.97	30	25.0	1.15	15
8	Pollen Shed (rate on scale from 0=male sterile to 9=heavy shed)			7		
07	Anther Color (Munsell code 10Y 8/8)			07 (Munsell code 10YR 8/6)		
26	Glume Color (Munsell code 5GY 4/6) green			26 (Munsell code 5GY 4/8) green		
1	Bar Glumes (Glume Bands): 1=Absent 2=Present			1		

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7a. EAR (Unhusked Data):

11	Silk Color (3 days after emergence) (Munsell code 5R 7/6)	27 (Munsell code 2.5GY 9/6)
01	Fresh Husk Color (25 days after 50% silking) (Munsell code 5GY 7/8)	21 (Munsell code 5GY 6/6)
21	Dry Husk Color (65 days after 50% silking) (Munsell code 10YR 8/4)	21 (Munsell code 10YR 9/4)
2	Position of Ear at Dry Husk Stage: 1=Upright 2=Horizontal 3=Pendent	1
5	Husk Tightness (Rate on scale from 1=very loose to 9=very tight)	7
2	Husk extension (at harvest): 1=Short (ears exposed) 2=Medium (<8 cm) 3=Long (8=10 cm beyond ear tip) 4=Very Long (>10 cm)	3

7b. EAR (Husked Ear Data):

		Standard Deviation	Sample Size		Standard Deviation	Sample Size
* 16.0	cm Ear Length	0.98	30	14.0	0.58	15
* 44.0	mm Ear Diameter at mid-point	0.75	30	45.0	3.46	15
130.0	gm Ear Weight	21.03	30	132.0	41.62	15
16	Number of Kernel Rows	1.26	30	17	1.00	15
2	Kernel Rows: 1=Indistinct 2=Distinct			2		
1	Row Alignment: 1=Straight 2=Slightly Curved 3=Spiral			1		
* 15.0	cm Shank Length	5.01	30	9.0	1.15	15
2	Ear Taper: 1=Slight 2=Average 3=Extreme			1		

8. KERNEL (Dried):

		Standard Deviation	Sample Size		Standard Deviation	Sample Size
11.0	mm Kernel Length	0.41	30	11.0	1.15	15
8.0	mm Kernel Width	0.63	30	8.0	0.58	15
4.0	mm Kernel Thickness	0.41	30	5.0	1.15	15
18.0	% Round Kernels (Shape Grade)	3.37	20	25.0	17.68	15
1	Aleurone Color Pattern: 1=Homozygous 2=Segregating			1		
(*) 07	Aleurone Color (Munsell code 2.5Y 8/12)			07	(Munsell code 2.5Y 8/12)	
* 07	Hard Endosperm color (Munsell code 10YR 6/12)			07	(Munsell code 10YR 7/14)	
* 3	Endosperm Type: 1=Sweet (Su1) 2=Extra Sweet (sh2) 3=Normal Starch 4=High Amylose Starch 5=Waxy Starch 6=High Protein 7=High Lysine 8=Super Sweet (se) 9=High Oil 10=Other ____			3		
26.0	gm Weight per 100 Kernels (unsized sample)	4.32	30	26.0	4.04	15

9. COB:

		Standard Deviation	Sample Size		Standard Deviation	Sample Size
27.0	mm Cob Diameter at mid-point	0.52	30	27.0	1.53	15
14	Cob Color (Munsell code 10R 4/6)			14	(Munsell code 10R 5/8)	

10. DISEASE RESISTANCE (Rate from 1 (most susceptible) to 9 (most resistant). Leave blank if not tested. Leave Race or Strain Options blank if polygenic):

A. Leaf Blights, Wilts, and Local Infection Diseases			
_	Anthracnose Leaf Blight (Colletotrichum graminicola)	-	
5	Common Rust (Puccinia sorghi)	6	
_	Common Smut (Ustilago maydis)	-	
3	Eyespot (Kabatiella zeae)	4	
_	Goss's Wilt (Clavibacter michiganense spp. nebraskense)	7	
3	Gray Leaf Spot (Cercospora zeae-maydis)	3	
_	Helminthosporium Leaf Spot (Bipolaris zeicola) Race ____		Race ____
4	Northern Leaf Blight (Exserohilum turcicum) Race ____	1	Race ____
2	Southern Leaf Blight (Bipolaris maydis) Race ____	2	Race ____
_	Southern Rust (Puccinia polysora)	-	
2	Stewart's Wilt (Erwinia stewartii)	4	
_	Other (Specify) ____	-	____
B. Systemic Diseases			
5	Corn Lethal Necrosis (MCMV and MDMV)	3	
_	Head Smut (Sphacelotheca reiliana)	-	
_	Maize Chlorotic Dwarf Virus (MCDV)	-	
_	Maize Chlorotic Mottle Virus (MCMV)	-	
5	Maize Dwarf Mosaic Virus (MDMV) Strain A	3	Strain A
_	Sorghum Downy Mildew of Corn (Peronosclerospora sorghi)	-	
_	Other (Specify) ____	-	____
C. Stalk Rots			
3	Anthracnose Stalk Rot (Colletotrichum graminicola)	-	
_	Diplodia Stalk Rot (Stenocarpella maydis)	-	
_	Fusarium Stalk Rot (Fusarium moniliforme)	-	
_	Gibberella Stalk Rot (Gibberella zeae)	-	
_	Other (Specify) ____	-	____
D. Ear and Kernel Rots			
_	Aspergillus Ear and Kernel Rot (Aspergillus flavus)	-	
_	Diplodia Ear Rot (Stenocarpella maydis)	-	
5	Fusarium Ear and Kernel Rot (Fusarium moniliforme)	6	
6	Gibberella Ear Rot (Gibberella zeae)	6	
_	Other (Specify) ____	-	____

11. INSECT RESISTANCE (Rate from 1 (most susceptible) to 9 (most resistant); (leave blank if not tested):

	Standard Deviation	Sample Size		Standard Deviation	Sample Size
_ Banks grass Mite (Oligonychus pratensis)			-		
Corn Worm (Helicoverpa zea)					
_ Leaf Feeding			-		
Silk Feeding					
_____ mg larval wt.	____	____	___	____	____
_ Ear Damage			-		
_ Corn Leaf Aphid (Rhopalosiphum maidis)			-		
_ Corn Sap Beetle (Carpophilus dimidiatus			-		
European Corn Borer (Ostrinia nubilalis)					
7 1st Generation (Typically Whorl Leaf Feeding)			3		
3 2nd Generation (Typically Leaf Sheath-Collar Feeding)			3		
Stalk Tunneling					
26.0cm tunneled/plant	____	____	16.0	____	____
Fall Armyworm (Spodoptera frugiperda)					
_ Leaf Feeding			-		
Silk Feeding			—		
_____mg larval wt.	____	____	____	____	____
_ Maize Weevil (Sitophilus zeamaize			-		
_ Northern Rootworm (Diabrotica barberi)			-		
_ Southern Rootworm (Diabrotica undecimpunctata)			-		
Southwestern Corn Borer (Diatreaea grandiosella)					
_ Leaf Feeding			-		
Stalk Tunneling					
_____ cm tunneled/plant	____	____	____	____	____
_ Two-spotted Spider Mite (Tetranychus urticae)			-		
_ Western Rootworm (Diabrotica virgifrea virgifera)			-		
_ Other (Specify) _____			- ____		

12. AGRONOMIC TRAITS:

4 Staygreen (at 65 days after anthesis) (Rate on a scale from 1=worst to excellent)	3
4.0 % Dropped Ears (at 65 days after anthesis)	0.0
_____ % Pre-anthesis Brittle Snapping	_____
_____ % Pre-anthesis Root Lodging	_____
_____ Post-anthesis Root Lodging (at 65 days after anthesis)	_____
3970.0 Kg/ha Yield of Inbred Per Se (at 12-13% grain moisture)	4680.0

13. MOLECULAR MARKERS: (0=data unavailable; 1=data available but not supplied; 2=data supplied)

1 Isozymes 0 RFLP's 0 RAPD's

COMMENTS (eg. state how heat units were calculated, standard inbred seed source, and/or whaere data was collected. Continue in Exhibit D):.

EXHIBIT D. ADDITIONAL DESCRIPTION OF PHBE2.
INBRED PER SE TEST COMPARISON OF PHBE2 AND PHN46 EVALUATED OVER TWO YEARS.

VARIETY #1 - PHBE2
VARIETY #2 - PHN46

* = 10% SIG + = 5% SIG # = 1% SIG

YEAR	REGION	VAR #	SDG VGR ABS	EST CNT ABS	GDU SHD ABS	GDU SLK ABS	RT LDG ABS	STA GRN ABS	BRT STK ABS	BAR PLT ABS
93	SUMMARY	1	4.9	22.7	1454	1475		4.4	96.0	95.7
		2	5.7	25.5	1448	1463		3.3	97.2	96.1
		LOCS	18	20	23	22		8	7	6
		REPS	18	20	23	22		8	7	6
		DIFF	0.7	2.8	6	12		1.1	1.2	0.4
		PROB	.103	.040+	.545	.269		.161	.413	.825
94	SUMMARY	1	4.6	19.8	1458	1481	89.5	4.4	95.4	96.4
		2	4.4	19.5	1479	1506	95.0	3.8	96.8	97.2
		LOCS	19	19	20	20	1	9	6	7
		REPS	19	19	20	20	1	9	6	7
		DIFF	0.3	0.3	21	25	5.5	0.7	1.4	0.8
		PROB	.523	.814	.031+	.010+		.332	.651	.656
TOTAL SUM		1	4.9	21.9	1454	1478	86.7	4.0	96.5	95.9
		2	5.1	22.7	1453	1473	93.3	3.5	96.3	96.7
		LOCS	50	51	55	54	2	24	18	19
		REPS	50	51	56	55	2	24	18	19
		DIFF	0.1	0.8	1	5	6.5	0.5	0.2	0.8
		PROB	.550	.257	.893	.480	.097*	.213	.902	.434

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CLARIFICATION OF DATA IN EXHIBITS C AND D

Please note the data presented in Exhibit C, "Objective Description of Variety," is data collected primarily at Johnston, Iowa plus description information from the maintaining station. The data in Exhibit D, "Additional Description of Variety," is data from comparisons of inbreds grown in the same tests in the adapted growing area of PHBE2.

DEFINITIONS

In the description and examples, a number of terms are used herein. In order to provide a clear and consistent understanding of the specification and claims, including the scope to be given such terms, the following definitions are provided:

BAR PLT = BARREN PLANTS. This is the percent of plants per plot that were not barren (lack ears).

BRT STK = BRITTLE STALKS. This is a measure of the stalk breakage near the time of pollination, and is an indication of whether a hybrid or inbred would snap or break near the time of flowering under severe winds. Data are presented as percentage of plants that did not snap.

BU ACR = YIELD (BUSHELS/ACRE). Actual yield of the grain at harvest adjusted to 15.5% moisture. ABS is in absolute terms and % MN is percent of the mean for the experiments in which the hybrid or inbred was grown.

DRP EAR = DROPPED EARS. This is a measure of the number of dropped ears per plot and represents the percentage of plants that did not drop ears prior to harvest.

EAR HT = EAR HEIGHT. The ear height is a measure from the ground to the top developed ear node attachment and is measured in centimeters.

EST CNT = EARLY STAND COUNT. This is a measure of the stand establishment in the spring and represents the number of plants that emerge on a per plot basis for the hybrid or inbred.

GDU SHD = GDU TO SHED. The number of growing degree units (GDUs) or heat units required for an inbred line or hybrid to have approximately 50 percent of the plants shedding pollen and is measured from the time of planting. Growing degree units are calculated by the Barger Method, where the heat units for a 24-hour period are:

$$GDU = \frac{(\text{Max. temp.} + \text{Min. temp.})}{2} - 50$$

The highest maximum temperature used is 86°F and the lowest minimum temperature used is 50°F. For each inbred or hybrid it takes a certain number of GDUs to reach various stages of plant development.

GDU SLK = GDU TO SILK. The number of growing degree units required for an inbred line or hybrid to have approximately 50 percent of the plants with silk emergence from time of planting. Growing degree units are calculated by the Barger Method as given in GDU SHD definition.

GRN APP. = GRAIN APPEARANCE. This is a 1 to 9 rating for the general quality of the shelled grain as it is harvested based on such factors as the color of the harvested grain, any mold on the grain, and any cracked grain. High scores indicate good grain quality and low scores indicate poor grain quality.

MST = HARVEST MOISTURE. The moisture is the actual percentage moisture of the grain at harvest.

PLT HT = PLANT HEIGHT. This is a measure of the height of the plant from the ground to the tip of the tassel in centimeters.

RT LDG = ROOT LODGING. Root lodging is the percentage of plants that do not root lodge; plants that lean from the vertical axis at an approximately 30° angle or greater would be counted as rootlodged.

SDG VGR = SEEDLING VIGOR. This is the visual rating (1 to 9) of the amount of vegetative growth after emergence at the seedling stage (approximately five leaves). A higher score indicates better vigor and a low score indicates poorer vigor.

STA GRN = STAY GREEN. Stay green is the measure of plant health near the time of black layer formation (physiological maturity). A high score indicates better late-season plant health.

STK LDG = STALK LODGING. This is the percentage of plants that did not stalk lodge (stalk breakage) as measured by either natural lodging or pushing the stalks and determining the percentage of plants that break below the ear.

TST WT = TEST WEIGHT UNADJUSTED. The measure of weight of the grain in pounds for a given volume (bushel).

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14E. EXHIBIT E. Statement of the Basis of Applicant's Ownership

Pioneer Hi-Bred International, Inc., Des Moines, Iowa, is the employer of the plant breeders involved in the development and evaluation of PHBE2. Pioneer Hi-Bred International, Inc. has the sole rights and ownership of PHBE2.

REPRODUCE LOCALLY. *Include form number and date on all reproductions.* FORM APPROVED - OMB NO. 0581-0055 EXPIRES: 12-31-96

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
Pioneer Hi-Bred International, Inc.		PHBE2

4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)	5. TELEPHONE (Include area code)	6. FAX (Include area code)
7301 NW 62nd Avenue P.O. Box 0085 Johnston, IA 50131-0085	515/270-3300	515/253-2125
	7. PVPO NUMBER 9500200	

8. Does the applicant own all rights to the variety? *Mark an "X" in appropriate block.* If no, please explain. [XX] YES [ ] NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? [XX] YES [ ] NO
If no, give name of country _____

10. Is the applicant the original breeder? If no, please answer the following: [XX] YES [ ] NO

a. If original rights to variety were owned by individual(s):
Is (are) the original breeder(s) a U.S. national(s)? If no, give name of country _____

[ ] YES [ ] NO

b. If original rights to variety were owned by a company:
Is the original breeder(s) U.S. based company? If no, give name of country _____

11. Additional explantion on ownership *(If needed, use reverse for extra space):*

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

3. If the applicant is an owner who is not the original breeder, both the original breeder and the applicant must meet one of the above criteria.

The original breeder may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.